



Tank top return line filter

Pi 5000

Nominal size 160 up to 1000
according to DIN 24550

1. Features

Efficient filters for modern hydraulic systems

- Modular design
- Minimal pressure loss
- Compact design
- Visual / electrical / electronical contamination control
- Threaded or flange ports

Quality filters, easy to service

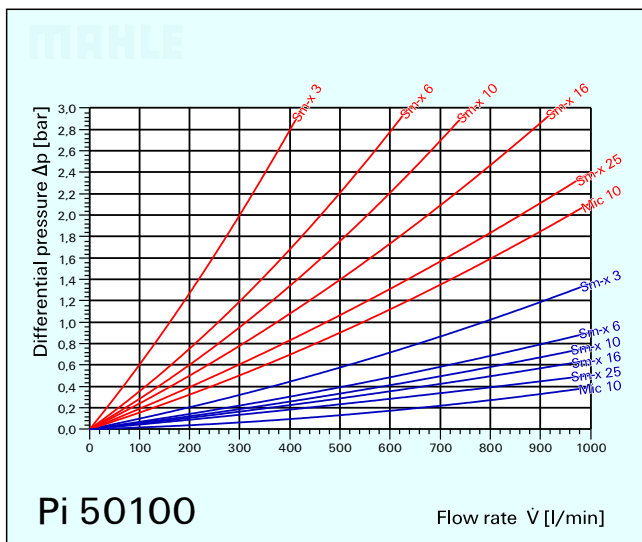
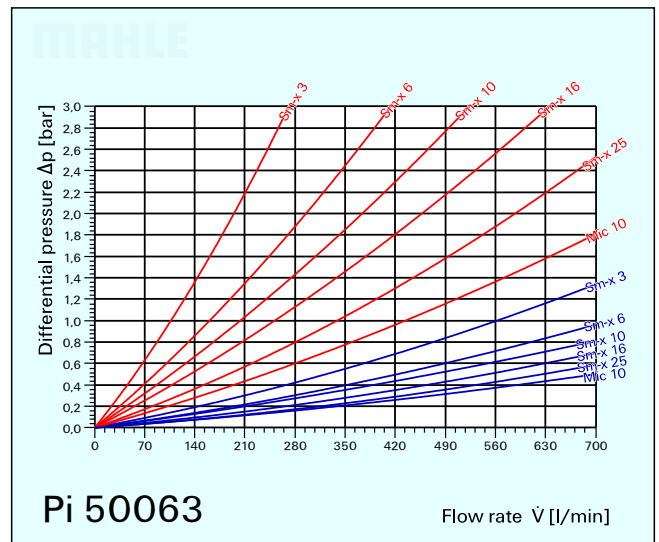
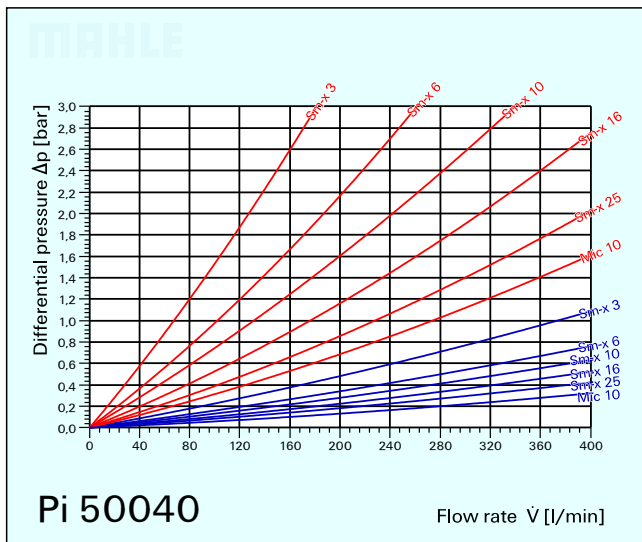
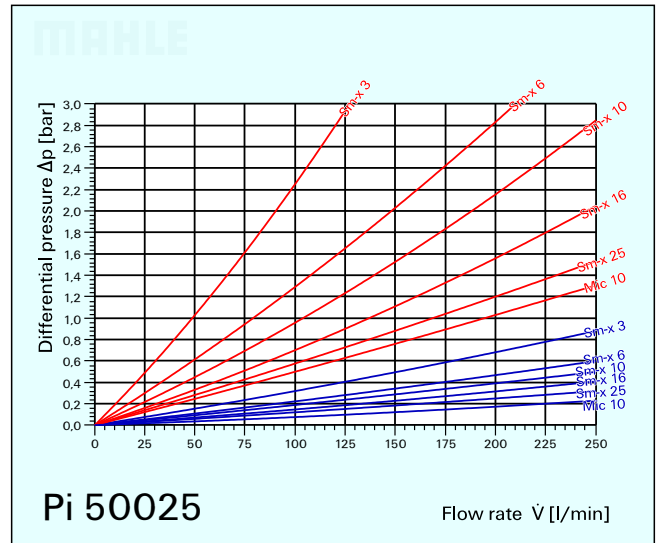
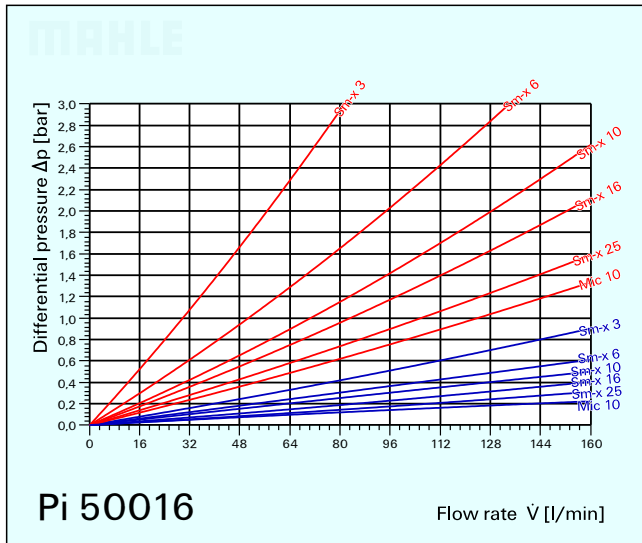
- Highly efficient Mic- or Sm-x filter elements
- β -rated elements per ISO 4572
- Large dirt holding capacity and high differential pressure stability providing optimal element service life
- 100 % bubble-point tested elements

World-wide sales

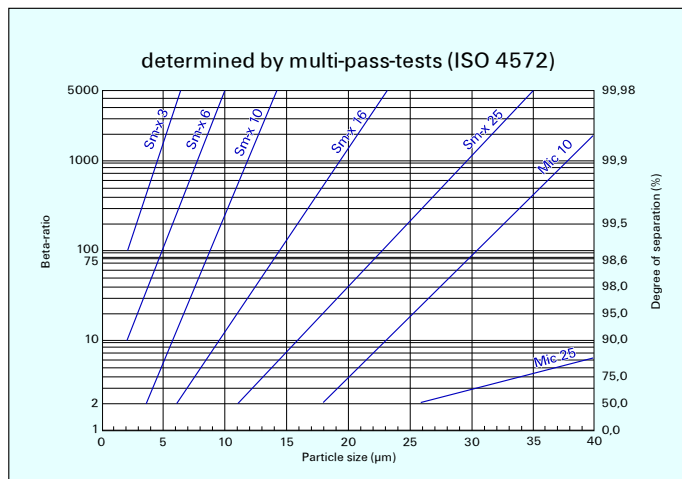


2. Flow rate/pressure drop curve compl. filter

■ $190 \text{ mm}^2/\text{s} (25^\circ \text{E})$
■ $33 \text{ mm}^2/\text{s} (4,5^\circ \text{E})$



3. Separation characteristics



4. Filter performance data

tested according to ISO 4572 (multi-pass-test)

Sm-x-elements
with Δp 10 bar

Sm-x 3	$\beta_3 \geq 75$
Sm-x 6	$\beta_6 \geq 75$
Sm-x 10	$\beta_{10} \geq 75$
Sm-x 16	$\beta_{16} \geq 75$
Sm-x 25	$\beta_{25} \geq 75$

at 5 bar final differential pressure

7. Order numbers

7.1 Housing Design* Pi 50 016– Pi 50 025– Pi 50 040– Pi 50 063– Pi 50 100–									
Housing design Type number	with bypass-valve 3,5 bar ①	with visual indicator 2,2 bar ②	with electrical indicator 2,2 bar ③	with pressure gauge (DM) ④	with pressure switch Normally Open (DSS) ⑤	with pressure switch Normally Closed (DSO) ⑤	with filling connection (BA)	Type number	Nominal size (NG)
–056								Pi 50 016–...*	160
–057								Pi 50 025–...*	250
–058								Pi 50 040–...*	400
–059								Pi 50 063–...*	630
–050								Pi 50 100–...*	1000
–052									
–092									
–093									
–094									
–095									
–096									
–097									

7.3 Connection executions

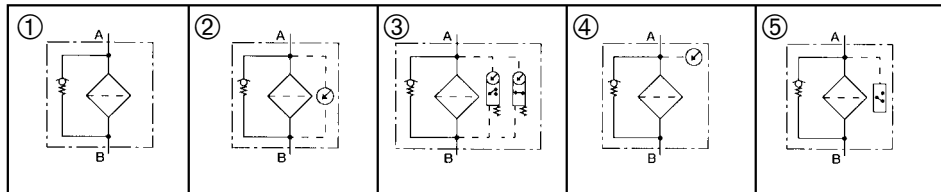
Nominal size (NG)	Standard-connection according DIN 24550 part 1	Further executions					
		/1	/2	/3	/4	/5	/6
160	G 1¼	G 1½	DN 38				
250	G 1½		DN 38	G 1¼			
400	DN 51	G 1½			G 2	DN 64	
630	DN 64	G 1½			G 2		DN 51
1000	DN 76						

5. Test regulations

MAHLE filter elements are manufactured respectively , tested in accordance with the following international standards:

No.	Designation
ISO 2941	Hydraulic-filter elements: Verification of burst resistance
ISO 2942	Hydraulic-filter elements: Determination of fabrication integrity
ISO 2943	Hydraulic-filter elements: Verification of material compatibility with hydraulic fluids
ISO 3723	Hydraulic-filter elements: Method for testing end-cap load
ISO 3724	Hydraulic-filter elements: Verification of flow fatigue characteristics
ISO 3968.2	Hydraulic-filters: Evaluation of pressure drop versus flow
ISO 4572	Hydraulic-filter elements: Testing of filter performance (multi-pass-test)

6. Symbols



7.2 Filter elements

() = filter surface area

organic media		inorganic media					wire mesh	
Mic 10 Δp 10 bar	Mic 25 Δp 10 bar	Sm-x 3 Δp 10 bar	Sm-x 6 Δp 10 bar	Sm-x 10 Δp 10 bar	Sm-x 16 Δp 10 bar	Sm-x 25 Δp 10 bar	Drg 25 Δp 10 bar	Drg 40 Δp 10 bar
Pi 13 016 RN (3750 cm²)	Pi 15 016 RN (3750 cm²)	Pi 21 016 RN (3750 cm²)	Pi 22 016 RN (3750 cm²)	Pi 23 016 RN (3750 cm²)	Pi 24 016 RN (3750 cm²)	Pi 25 016 RN (3750 cm²)	Pi 35 016 RN (2020 cm²)	Pi 36 016 RN (2020 cm²)
Pi 13 025 RN (6050 cm²)	Pi 15 025 RN (6050 cm²)	Pi 21 025 RN (6050 cm²)	Pi 22 025 RN (6050 cm²)	Pi 23 025 RN (6050 cm²)	Pi 24 025 RN (6050 cm²)	Pi 25 025 RN (6050 cm²)	Pi 35 025 RN (3250 cm²)	Pi 36 025 RN (3250 cm²)
Pi 13 040 RN (9450 cm²)	Pi 15 040 RN (9450 cm²)	Pi 21 040 RN (8250 cm²)	Pi 22 040 RN (8250 cm²)	Pi 23 040 RN (8250 cm²)	Pi 24 040 RN (8250 cm²)	Pi 25 040 RN (8250 cm²)	Pi 35 040 RN (6370 cm²)	Pi 36 040 RN (6370 cm²)
Pi 13 063 RN (15550 cm²)	Pi 15 063 RN (15550 cm²)	Pi 21 063 RN (13515 cm²)	Pi 22 063 RN (13515 cm²)	Pi 23 063 RN (13515 cm²)	Pi 24 063 RN (13515 cm²)	Pi 25 063 RN (13515 cm²)	Pi 35 063 RN (10320 cm²)	Pi 36 063 RN (10320 cm²)
Pi 13 100 RN (17500 cm²)	Pi 15 100 RN (17500 cm²)	Pi 21 100 RN (17500 cm²)	Pi 22 100 RN (17500 cm²)	Pi 23 100 RN (17500 cm²)	Pi 24 100 RN (17500 cm²)	Pi 25 100 RN (17500 cm²)	Pi 35 100 RN (13100 cm²)	Pi 36 100 RN (13100 cm²)

7.4 Sealing material

N = NBR
F = FPM
E = EPDM

7.5 Example for ordering filters

Type no.	Housing design	Execution	Sealing material	+ filter element
Pi 50016 – = NG 160	056/ = with bypass valve 3,5 bar	2 = DN 38	–N = NBR	+ Pi 25016 RN = return line filter element Sm-x 25 with NBR sealing

8. Specifications

Design:	tank mounting filter
Nominal pressure:	10 bars
Test pressure:	13 bars
Temperature range:	−10 °C to +120 °C
	(other temperature ranges on request)
Bypass opening pressure:	Δp 3,5 bar ±10 %
Filter head material:	GD Al/G Al
Filter bowl material:	St.
Filter cover material:	GD Al/G Al
Activating pressure of visual/ electrical pressure indicator:	Δp 2,2 bar ±10 %
Electrical specifications of pressure indicator:	
Maximum voltage:	230 V ~/=
Maximum current on contact:	2,5 A
Maximum contact load:	60 VA/40 W
Inrush current:	70 VA
Type of protection:	IP 65 when inserted and secured
Contact:	normally open/normally closed
Cable connection:	PG 11 Ø 6-10

The electrical indicator function can be changed from the Normally Open position to the Normally Closed position or visa versa by inverting the electrical section.

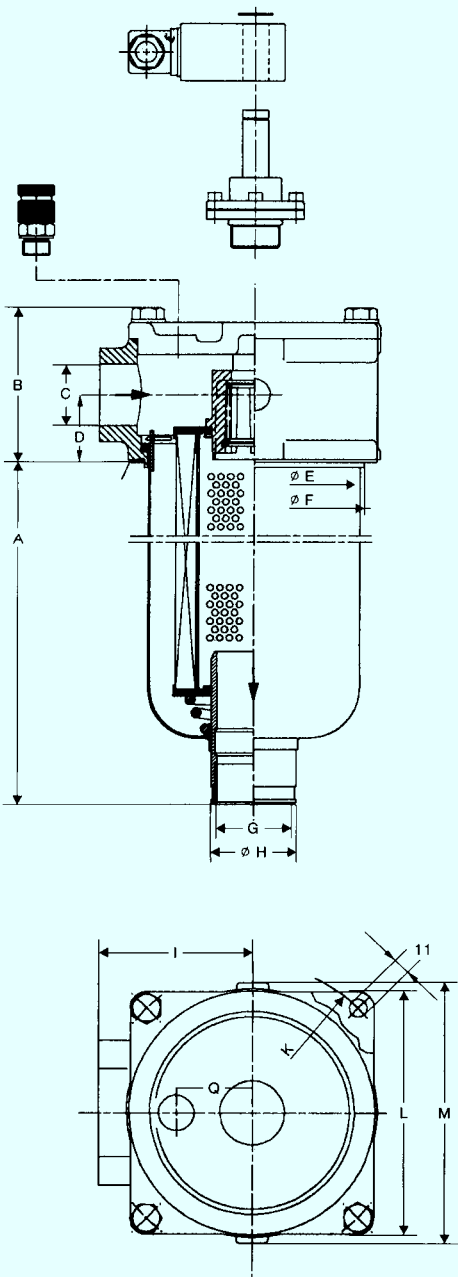
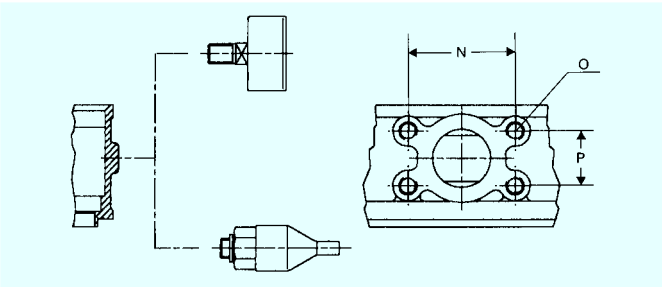
With the inrush current of 70 VA the indicator can trigger small contactors or contactor relays.

Inductivity in the direct current may require the use of a signal eraser.

For further information and executions please see our leaflet Contamination Indicators.

Filters compatible with standard mineral oils.

Please contact us in case of using other media.



9. Dimensions

Dimen- sion Type	A	B	C	D	E	F	G	H	I	K	L	M	N	O	P	Q	Weight kg
Pi 50 016—...	207	94	see 7.3	40	130	135	G 1½	52	93,5	185	151	162	70	M 12	35,7	47	2,8
Pi 50 025—...	297	94		40	130	135	G 1½	52	93,5	185	151	162	70	M 12	35,7	47	4,2
Pi 50 040—...	309	118		55	163	175,5	G 2	70	108	220	180	212	77,8	M 12	42,9	60	6,4
Pi 50 063—...	459	118		55	163	175,5	G 2	70	108	220	180	212	89	M 12	50,8	60	7,2
Pi 50 100—...	430	149		70	190	200	G 3	—	135	250	207	240	106,4	M 16	62	75	10,6

10. Installation, operating and maintenance instructions

10.1 Filter installation

When installing the filter make sure that:

- sufficient space is available to remove filter element and filter bowl,
- the mounting hole in the tank top is not excessively large, to ensure proper sealing.
- the filter is free of tension after installation.

Preferably the filter should be installed with the filter bowl pointing downwards. In this position the visual pressure indicator is accessible and visible.

10.2 Connecting the electrical pressure indicator

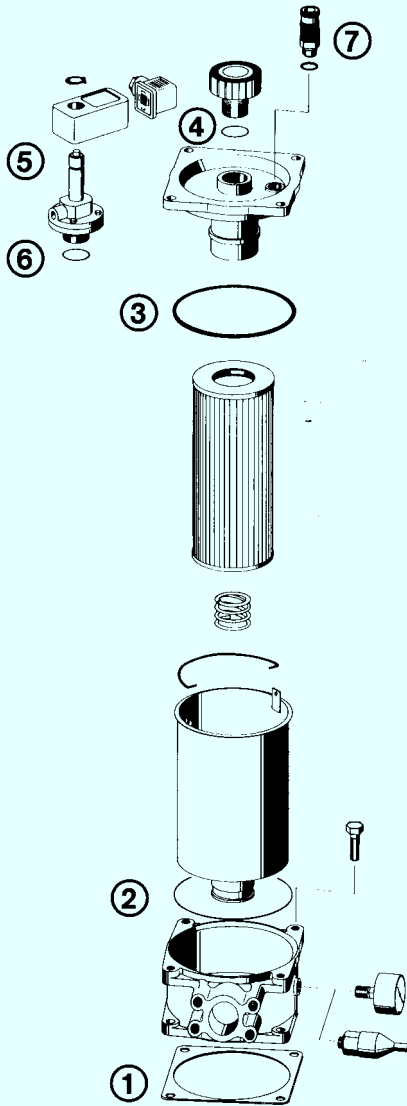
The electrical pressure indicator is connected via a 2-pole appliance plug according to DIN 43650 with poles marked 1 and 2. The electrical section can be inverted to change from Normally Open position to Normally Closed position or vice versa.

10.3 When must the filter element be replaced?

- Filters equipped with visual and/or electrical pressure indicators: During cold starts, the indicator may give a warning signal. Depress the red button of the visual indicator once again only after operating temperature has been reached. If the red button immediately pops out again and/or the electrical signal has not switched off after reaching operating temperature, the filter element must be replaced after the end of the shift.
- Filters without pressure indicator: the filter element should be replaced after trial run or flushing of the system. Afterwards follow instructions of the manufacturer.
- Please, always ensure that you have original MAHLE replacement elements in stock: disposable elements (Mic or Sm-x) cannot be cleaned.

10.4 Element replacement

- Stop system and relieve filter from pressure.
- Remove cover, screws then lift off cover.
- Remove filter bowl and filter element by pulling upwards.
- Remove filter element with a side-to-side motion.
- Clean the filter bowl with a suitable medium.
- Check O-rings on filter cover and filter bowl for damage. Replace, if necessary.
- Make sure that the part number on the spare element corresponds with the part number on the filter name-plate.
- Remove filter element from the plastic bag and reassemble filter in reverse order (items 6-1).



11. Spare parts list

Pos.	Type/Order-No.
①	Sealkit for filter housing
—	NG 160/250 NG 400/630 NG 1000
—	NBR 822.790.2 822.793.6 822.796.9
④	FPM 822.791.0 822.794.4 822.797.7
—	EPDM 822.792.8 822.795.1 822.798.5
⑤	Contamination indicator
—	visual electrical electrical Pressure Pressure Switch
—	773.780.2 773.803.2 upper part Gauge Normally Normally
—	only 838.199.8 closed opened
—	Pis 3084/ Pis 3085/ 753.655.0 784.584.5 787.059.5
—	2.2 bar 2.2 bar
⑥	Seal kit for contamination indicator
—	NBR 776.021.8
—	FPM 776.022.6
—	EPDM 776.023.4
⑦	Quick-release coupling 796.513.0

Subject to technical alteration without prior notice.



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